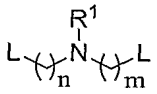
We claim:

1. A compound represented by **A**:



A

wherein, independently for each occurrence,

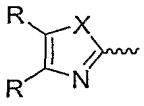
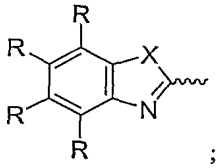
R^1 is H, alkyl, hydroxyalkyl, alkoxyalkyl, aminoalkyl, thioalkyl, alkenyl, alkynyl, aryl, heteroaryl, aralkyl, heteroaralkyl, acyl, aminoacyl, hydroxyacyl, thioacyl, (amino)alkoxycarbonyl, (hydroxy)alkoxycarbonyl, (amino)alkylaminocarbonyl, (hydroxy)alkylaminocarbonyl, $-CO_2H$, $-(CH_2)_d-R_{80}$, or an amino acid radical;

R_{80} is carboxaldehyde, carboxylate, carboxamido, alkoxycarbonyl, aryloxycarbonyl, ammonium, aryl, heteroaryl, cycloalkyl, cycloalkenyl, heterocyclyl, polycyclyl, amino acid, peptide, saccharide, ribonucleic acid, (deoxy)ribonucleic acid, or a ligand for a G-protein-coupled receptor;

d is an integer in the range 0 to 12 inclusive;

m is an integer in the range 0 to 6 inclusive;

n is an integer in the range 0 to 6 inclusive;

L is  or  ;

X is $-N(R^2)-$, -O-, or -S-;

R is selected from the group consisting of hydrogen, halogen, alkyl, alkenyl, alkynyl, hydroxyl, alkoxyl, acyl, acyloxy, acylamino, silyloxy, amino, nitro, sulfhydryl, alkylthio, imino, amido, phosphoryl, phosphonate, phosphine, carbonyl, carboxyl, carboxamide, anhydride, silyl, thioalkyl, alkylsulfonyl, arylsulfonyl, selenoalkyl, ketone, aldehyde, ester, heteroalkyl, cyano, guanidine, amidine, acetal, ketal, amine oxide, aryl, heteroaryl, aralkyl, heteroaralkyl, azido, aziridine, carbamoyl, epoxide,

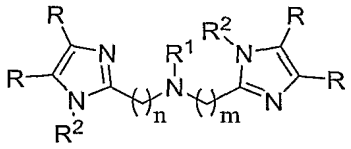
hydroxamic acid, imide, oxime, sulfonamide, thioamide, thiocarbamate, urea, thiourea, and $-(CH_2)_d-R_{80}$; and

R^2 is hydrogen or a lipophilic group.

2. The compound of claim 1, wherein said compound is complexed with a radionuclide.

3. The compound of claim 1, wherein said compound is complexed with a radionuclide, wherein said radionuclide is technetium or rhenium.

4. A compound represented by **B**:



B

wherein, independently for each occurrence,

R^1 is H, alkyl, hydroxyalkyl, alkoxyalkyl, aminoalkyl, thioalkyl, alkenyl, alkynyl, aryl, heteroaryl, aralkyl, heteroaralkyl, acyl, aminoacyl, hydroxyacyl, thioacyl, (amino)alkoxycarbonyl, (hydroxy)alkoxycarbonyl, (amino)alkylaminocarbonyl, (hydroxy)alkylaminocarbonyl, $-CO_2H$, $-(CH_2)_d-R_{80}$, or an amino acid radical;

R_{80} is carboxaldehyde, carboxylate, carboxamido, alkoxycarbonyl, aryloxycarbonyl, ammonium, aryl, heteroaryl, cycloalkyl, cycloalkenyl, heterocyclyl, polycyclyl, amino acid, peptide, saccharide, ribonucleic acid, (deoxy)ribonucleic acid, or a ligand for a G-protein-coupled receptor;

d is an integer in the range 0 to 12 inclusive;

m is an integer in the range 0 to 6 inclusive;

n is an integer in the range 0 to 6 inclusive;

R is selected from the group consisting of hydrogen, halogen, alkyl, alkenyl, alkynyl, hydroxyl, alkoxyl, acyl, acyloxy, acylamino, silyloxy, amino, nitro, sulfhydryl, alkylthio, imino, amido, phosphoryl, phosphonate, phosphine, carbonyl, carboxyl, carboxamide, anhydride, silyl, thioalkyl, alkylsulfonyl, arylsulfonyl, selenoalkyl, ketone, aldehyde, ester, heteroalkyl, cyano, guanidine, amidine, acetal, ketal, amine

oxide, aryl, heteroaryl, aralkyl, heteroaralkyl, azido, aziridine, carbamoyl, epoxide, hydroxamic acid, imide, oxime, sulfonamide, thioamide, thiocarbamate, urea, thiourea, and $-(CH_2)_d-R_{80}$; and

R^2 is hydrogen or a lipophilic group.

5. The compound of claim 4, wherein said compound is complexed with a radionuclide.

6. The compound of claim 4, wherein said compound is complexed with a radionuclide, wherein said radionuclide is technetium or rhenium.

7. The compound of claim 4, wherein m is 1.

8. The compound of claim 4, wherein n is 1.

9. The compound of claim 4, wherein m is 1; and n is 1.

10. The compound of claim 4, wherein R is hydrogen.

11. The compound of claim 4, wherein R^2 is a lipophilic group.

12. The compound of claim 4, wherein R^2 is an ether, aralkyl or alkylaryl.

13. The compound of claim 4, wherein R is hydrogen; and R^2 is an ether, aralkyl or alkylaryl.

14. The compound of claim 4, wherein m is 1; n is 1; R is hydrogen; and R^2 is an ether, aralkyl or alkylaryl.

15. The compound of claim 4, wherein R^1 is $-(CH_2)_d-R_{80}$.

16. The compound of claim 4, wherein m is 1; n is 1; R is hydrogen; R^2 is an ether, aralkyl or alkylaryl; and R^1 is $-(CH_2)_d-R_{80}$.

17. The compound of claim 4, wherein m is 1; n is 1; R is hydrogen; R^2 is an ether, aralkyl or alkylaryl; and R^1 is $-(CH_2)_d-R_{80}$; wherein said compound is complexed with a radionuclide.

18. The compound of claim 4, wherein m is 1; n is 1; R is hydrogen; R^2 is an ether, aralkyl or alkylaryl; and R^1 is $-(CH_2)_d-R_{80}$; wherein said compound is complexed with a radionuclide, wherein said radionuclide is technetium or rhenium.

19. The compound of claim 4, wherein R^1 is an amino acid radical.

20. The compound of claim 4, wherein R^1 is an amino acid radical; m is 1; and n is 1.

21. The compound of claim 4, wherein R^1 is an amino acid radical; m is 1; n is 1; and R^2 is an ether, aralkyl or alkylaryl.

22. The compound of claim 4, wherein R^1 is an amino acid radical; m is 1; n is 1; R is hydrogen; and R^2 is an ether, aralkyl or alkylaryl; wherein said compound is complexed with a radionuclide.

23. The compound of claim 4, wherein R^1 is an amino acid radical; m is 1; n is 1; R is hydrogen; and R^2 is an ether, aralkyl or alkylaryl; wherein said compound is complexed with a radionuclide, wherein said radionuclide is technetium or rhenium.

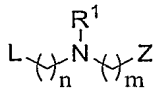
24. The compound of claim 4, wherein the amino acid radical is $-CH_2CH_2CH_2CH_2CH(NH_2)CO_2H$.

25. The compound of claim 4, wherein the amino acid radical is $-CH(CO_2H)CH_2CH_2CH_2CH_2NH_2$.

26. The compound of claim 4, wherein the amino acid radical is $-CH_2CH_2CO_2H$.

27. The compound of claim 4, wherein the amino acid radical is $-CH(CO_2H)(CH_2)_xCH(NH_2)CO_2H$, wherein x is an integer from 3 to 9 inclusively.

28. A compound represented by **C**:



C

wherein, independently for each occurrence,

Z is thioalkyl, carboxylate, 2-(carboxy)aryl, 2-(carboxy)heteroaryl, 2-(hydroxy)aryl, 2-(hydroxy)heteroaryl, 2-(thiol)aryl, or 2-(thiol)heteroaryl; and

R^1 is H, alkyl, hydroxyalkyl, alkoxyalkyl, aminoalkyl, thioalkyl, alkenyl, alkynyl, aryl, heteroaryl, aralkyl, heteroaralkyl, acyl, aminoacyl, hydroxyacyl, thioacyl, (amino)alkoxycarbonyl, (hydroxy)alkoxycarbonyl, (amino)alkylaminocarbonyl, (hydroxy)alkylaminocarbonyl, $-CO_2H$, $-(CH_2)_d-R_{80}$, or an amino acid radical;

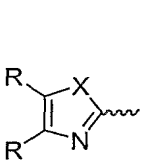
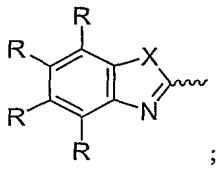
R_{80} is carboxaldehyde, carboxylate, carboxamido, alkoxycarbonyl, aryloxycarbonyl, ammonium, aryl, heteroaryl, cycloalkyl, cycloalkenyl, heterocyclyl, polycyclyl,

amino acid, peptide, saccharide, ribonucleic acid, (deoxy)ribonucleic acid, or a ligand for a G-protein-coupled receptor;

d is an integer in the range 0 to 12 inclusive;

m is an integer in the range 0 to 6 inclusive;

n is an integer in the range 0 to 6 inclusive;

L is  or  ;

X is -N(R^2)-, -O-, or -S-;

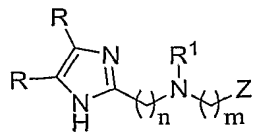
R is selected from the group consisting of hydrogen, halogen, alkyl, alkenyl, alkynyl, hydroxyl, alkoxyl, acyl, acyloxy, acylamino, silyloxy, amino, nitro, sulfhydryl, alkylthio, imino, amido, phosphoryl, phosphonate, phosphine, carbonyl, carboxyl, carboxamide, anhydride, silyl, thioalkyl, alkylsulfonyl, arylsulfonyl, selenoalkyl, ketone, aldehyde, ester, heteroalkyl, cyano, guanidine, amidine, acetal, ketal, amine oxide, aryl, heteroaryl, aralkyl, heteroaralkyl, azido, aziridine, carbamoyl, epoxide, hydroxamic acid, imide, oxime, sulfonamide, thioamide, thiocarbamate, urea, thiourea, and -$(CH_2)_d$-R_{80}; and

R^2 is hydrogen or a lipophilic group.

29. The compound of claim 28, wherein said compound is complexed with a radionuclide.

30. The compound of claim 28, wherein said compound is complexed with a radionuclide, wherein said radionuclide is technetium or rhenium.

31. A compound represented by **D**:



D

wherein, independently for each occurrecnce,

Z is thioalkyl, carboxylate, 2-(carboxy)aryl, 2-(carboxy)heteroaryl, 2-(hydroxy)aryl, 2-(hydroxy)heteroaryl, 2-(thiol)aryl, or 2-(thiol)heteroaryl; and

R^1 is H, alkyl, hydroxyalkyl, alkoxyalkyl, aminoalkyl, thioalkyl, alkenyl, alkynyl, aryl, heteroaryl, aralkyl, heteroaralkyl, acyl, aminoacyl, hydroxyacyl, thioacyl, (amino)alkoxycarbonyl, (hydroxy)alkoxycarbonyl, (amino)alkylaminocarbonyl, (hydroxy)alkylaminocarbonyl, $-CO_2H$, $-(CH_2)_d-R_{80}$, or an amino acid radical;

R_{80} is carboxaldehyde, carboxylate, carboxamido, alkoxycarbonyl, aryloxycarbonyl, ammonium, aryl, heteroaryl, cycloalkyl, cycloalkenyl, heterocyclyl, polycyclyl, amino acid, peptide, saccharide, ribonucleic acid, (deoxy)ribonucleic acid, or a ligand for a G-protein-coupled receptor;

d is an integer in the range 0 to 12 inclusive;

m is an integer in the range 0 to 6 inclusive;

n is an integer in the range 0 to 6 inclusive; and

R is selected from the group consisting of hydrogen, halogen, alkyl, alkenyl, alkynyl, hydroxyl, alkoxyl, acyl, acyloxy, acylamino, silyloxy, amino, nitro, sulfhydryl, alkylthio, imino, amido, phosphoryl, phosphonate, phosphine, carbonyl, carboxyl, carboxamide, anhydride, silyl, thioalkyl, alkylsulfonyl, arylsulfonyl, selenoalkyl, ketone, aldehyde, ester, heteroalkyl, cyano, guanidine, amidine, acetal, ketal, amine oxide, aryl, heteroaryl, aralkyl, heteroaralkyl, azido, aziridine, carbamoyl, epoxide, hydroxamic acid, imide, oxime, sulfonamide, thioamide, thiocarbamate, urea, thiourea, and $-(CH_2)_d-R_{80}$.

32. The compound of claim 31, wherein said compound is complexed with a radionuclide.

33. The compound of claim 31, wherein said compound is complexed with a radionuclide, wherein said radionuclide is technetium or rhenium.

34. The compound of claim 31, wherein Z is carboxylate.

35. The compound of claim 31, wherein m is 1.

36. The compound of claim 31, wherein n is 1.

37. The compound of claim 31, wherein m is 1; and n is 1.

38. The compound of claim 31, wherein Z is carboxylate; m is 1; and n is 1.

39. The compound of claim 31, wherein R is hydrogen.

40. The compound of claim 31, wherein Z is carboxylate; m is 1; n is 1; and R is hydrogen.

41. The compound of claim 31, wherein R^1 is $-(CH_2)_d-R_{80}$.

42. The compound of claim 31, wherein Z is carboxylate; m is 1; n is 1; R is hydrogen; and R^1 is $-(CH_2)_d-R_{80}$.

43. The compound of claim 31, wherein Z is carboxylate; m is 1; n is 1; R is hydrogen; and R^1 is $-(CH_2)_d-R_{80}$; wherein said compound is complexed with a radionuclide.

44. The compound of claim 31, wherein Z is carboxylate; m is 1; n is 1; R is hydrogen; and R^1 is $-(CH_2)_d-R_{80}$; wherein said compound is complexed with a radionuclide, wherein said radionuclide is technetium or rhenium.

45. The compound of claim 31, wherein R^1 is an amino acid radical.

46. The compound of claim 31, wherein R^1 is an amino acid radical; m is 1; and n is 1.

47. The compound of claim 31, wherein R^1 is an amino acid radical; m is 1; n is 1; and R is hydrogen.

48. The compound of claim 31, wherein R^1 is an amino acid radical; m is 1; n is 1; and R is hydrogen; wherein said compound is complexed with a radionuclide.

49. The compound of claim 31, wherein R^1 is an amino acid radical; m is 1; n is 1; and R is hydrogen; wherein said compound is complexed with a radionuclide, wherein said radionuclide is technetium or rhenium.

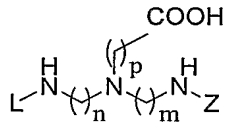
50. The compound of claim 31, wherein the amino acid radical is $-CH_2CH_2CH_2CH_2CH(NH_2)CO_2H$.

51. The compound of claim 31, wherein the amino acid radical is $-CH(CO_2H)CH_2CH_2CH_2CH_2NH_2$.

52. The compound of claim 31, wherein the amino acid radical is $-CH_2CH_2CO_2H$.

53. The compound of claim 31, wherein the amino acid radical is $-CH(CO_2H)(CH_2)_xCH(NH_2)CO_2H$, wherein x is an integer from 3 to 9 inclusively.

54. A compound represented by **E**:



E

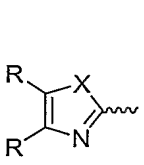
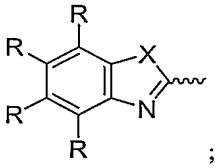
wherein, independently for each occurrence,

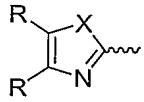
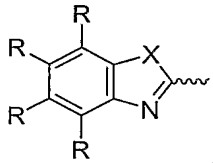
m is an integer in the range 0 to 6 inclusive;

n is an integer in the range 0 to 6 inclusive;

p is an integer in the range of 1 to 10 inclusive;

Z is selected from the group consisting of $-CH_2COOH$, alkyl, aryl, aralkyl,

 and  ;

L is  or  ;

each instance of X is $-N(R^2)-$, -O-, or -S-;

R^2 is hydrogen or a lipophilic group;

R is selected from the group consisting of halogen, alkyl, alkenyl, alkynyl, hydroxyl, alkoxyl, acyl, acyloxy, acylamino, silyloxy, amino, nitro, sulfhydryl, alkylthio, imino, amido, phosphoryl, phosphonate, phosphine, carbonyl, carboxyl, carboxamide, anhydride, silyl, thioalkyl, alkylsulfonyl, arylsulfonyl, selenoalkyl, ketone, aldehyde, ester, heteroalkyl, cyano, guanidine, amidine, acetal, ketal, amine oxide, aryl, heteroaryl, aralkyl, heteroaralkyl, azido, aziridine, carbamoyl, epoxide, hydroxamic acid, imide, oxime, sulfonamide, thioamide, thiocarbamate, urea, thiourea, and $-(CH_2)_d-R_{80}$;

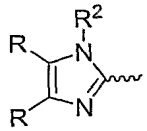
R_{80} is carboxaldehyde, carboxylate, carboxamido, alkoxycarbonyl, aryloxycarbonyl, ammonium, aryl, heteroaryl, cycloalkyl, cycloalkenyl, heterocyclyl, polycyclyl,

amino acid, peptide, saccharide, ribonucleic acid, (deoxy)ribonucleic acid, or a ligand for a G-protein-coupled receptor; and

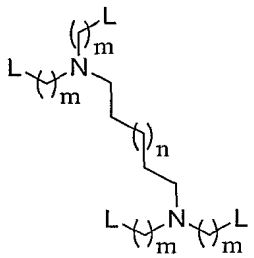
d is an integer in the range 0 to 12 inclusive.

55. The compound of claim 54, wherein said compound is complexed with a radionuclide.

56. The compound of claim 54, wherein said compound is complexed with a radionuclide, wherein said radionuclide is technetium or rhenium.

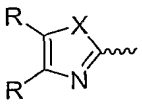
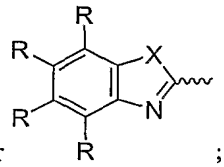
57. The compound of claim 54, wherein L is  ; R is hydrogen; R^2 is hydrogen; and Z is alkyl.

58. A compound of formula **F**:



F

wherein, independently for each occurrence,

L is  or  ;

X is -N(R^2)-, -O-, or -S-;

R is halogen, alkyl, alkenyl, alkynyl, hydroxyl, alkoxyl, acyl, acyloxy, acylamino, silyloxy, amino, nitro, sulfhydryl, alkylthio, imino, amido, phosphoryl, phosphonate, phosphine, carbonyl, carboxyl, carboxamide, anhydride, silyl, thioalkyl, alkylsulfonyl, arylsulfonyl, selenoalkyl, ketone, aldehyde, ester, heteroalkyl, cyano, guanidine, amidine, acetal, ketal, amine oxide, aryl, heteroaryl, aralkyl, heteroaralkyl, azido, aziridine, carbamoyl, epoxide, hydroxamic acid, imide, oxime,

sulfonamide, thioamide, thiocarbamate, urea, thiourea, or -$(CH_2)_d$-R_{80};

R_{80} is carboxaldehyde, carboxylate, carboxamido, alkoxycarbonyl, aryloxycarbonyl, ammonium, aryl, heteroaryl, cycloalkyl, cycloalkenyl, heterocyclyl, polycyclyl, amino acid, peptide, saccharide, ribonucleic acid, (deoxy)ribonucleic acid, or ligand for a G-protein-coupled receptor;

R_2 is H or a lipophilic group;

d is an integer in the range 0 to 12 inclusive;

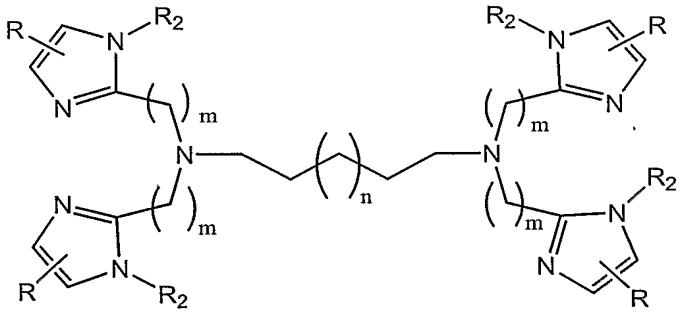
m is an integer in the range 0 to 6 inclusive; and

n is an integer in the range 0 to 6 inclusive.

59. The compound of claim 58, wherein the compound is complexed with a radionuclide.

60. The compound of claim 58, wherein the compound is complexed with a radionuclide, wherein the radionuclide is technetium or rhenium.

61. A compound of formula **G**:



G

wherein, independently for each occurrence,

R is absent or present 1 or 2 times;

R is halogen, alkyl, alkenyl, alkynyl, hydroxyl, alkoxyl, acyl, acyloxy, acylamino, silyloxy, amino, nitro, sulfhydryl, alkylthio, imino, amido, phosphoryl, phosphonate, phosphine, carbonyl, carboxyl, carboxamide, anhydride, silyl, thioalkyl, alkylsulfonyl, arylsulfonyl, selenoalkyl, ketone, aldehyde, ester, heteroalkyl, cyano, guanidine, amidine, acetal, ketal, amine oxide, aryl, heteroaryl, aralkyl, heteroaralkyl, azido, aziridine, carbamoyl, epoxide, hydroxamic acid, imide, oxime,

sulfonamide, thioamide, thiocarbamate, urea, thiourea, or -$(CH_2)_d$-R_{80};

R_{80} is carboxaldehyde, carboxylate, carboxamido, alkoxycarbonyl, aryloxycarbonyl, ammonium, aryl, heteroaryl, cycloalkyl, cycloalkenyl, heterocyclyl, polycyclyl, amino acid, peptide, saccharide, ribonucleic acid, (deoxy)ribonucleic acid, or ligand for a G-protein-coupled receptor;

R_2 is H or a lipophilic group;

d is an integer in the range 0 to 12 inclusive;

m is an integer in the range 0 to 6 inclusive; and

n is an integer in the range 0 to 6 inclusive.

62. The compound of claim 61, wherein the compound is complexed with a radionuclide.

63. The compound of claim 61, wherein the compound is complexed with a radionuclide, wherein the radionuclide is technetium or rhenium.

64. The compound of claim 61, wherein m is 1.

65. The compound of claim 61, wherein n is 1.

66. The compound of claim 61, wherein m is 1; and n is 1.

67. The compound of claim 61, wherein R is absent.

68. The compound of claim 61, wherein R_2 is a lipophilic group.

69. The compound of claim 61, wherein R_2 is an ether, aralkyl, or alkylaryl.

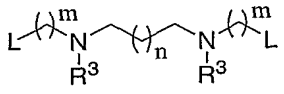
70. The compound of claim 61, wherein R is absent; and R_2 is an ether, aralkyl, or alkylaryl.

71. The compound of claim 61, wherein m is 1; n is 1; R is absent; and R_2 is an ether, aralkyl, or alkylaryl.

72. The compound of claim 61, wherein m is 1; n is 1; R is absent; and R_2 is an ether, aralkyl, or alkylaryl; wherein the compound is complexed with a radionuclide.

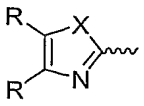
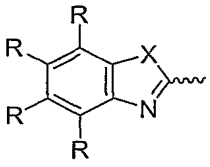
73. The compound of claim 61, wherein m is 1; n is 1; R is absent; and R_2 is an ether, aralkyl, or alkylaryl; wherein the compound is complexed with a radionuclide, wherein said radionuclide is technetium or rhenium.

74. A compound of formula **H**:



H

wherein, independently for each occurrence,

L is  or  ;

X is -N(R^2)-, -O-, or -S-;

R is halogen, alkyl, alkenyl, alkynyl, hydroxyl, alkoxyl, acyl, acyloxy, acylamino, silyloxy, amino, nitro, sulfhydryl, alkylthio, imino, amido, phosphoryl, phosphonate, phosphine, carbonyl, carboxyl, carboxamide, anhydride, silyl, thioalkyl, alkylsulfonyl, arylsulfonyl, selenoalkyl, ketone, aldehyde, ester, heteroalkyl, cyano, guanidine, amidine, acetal, ketal, amine oxide, aryl, heteroaryl, aralkyl, heteroaralkyl, azido, aziridine, carbamoyl, epoxide, hydroxamic acid, imide, oxime, sulfonamide, thioamide, thiocarbamate, urea, thiourea, or -$(CH_2)_d$-R_{80};

R_{80} is independently for each occurrence carboxaldehyde, carboxylate, carboxamido, alkoxycarbonyl, aryloxycarbonyl, ammonium, aryl, heteroaryl, cycloalkyl, cycloalkenyl, heterocyclyl, polycyclyl, amino acid, peptide, saccharide, ribonucleic acid, (deoxy)ribonucleic acid, or ligand for a G-protein-coupled receptor;

R_2 is H or a lipophilic group;

R_3 is a moiety comprising a neutral or anionic Lewis base, H, alkyl, hydroxyalkyl, alkoxyalkyl, aminoalkyl, thioalkyl, alkenyl, alkynyl, aryl, heteroaryl, aralkyl, heteroaralkyl, acyl, aminoacyl, hydroxyacyl, thioacyl, (amino)alkoxycarbonyl, (hydroxy)alkoxycarbonyl, (amino)alkylaminocarbonyl, (hydroxy)alkylaminocarbonyl, -CO_2H, -$(CH_2)_d$-R_{80}, or an amino acid radical;

d is an integer in the range 0 to 12 inclusive;

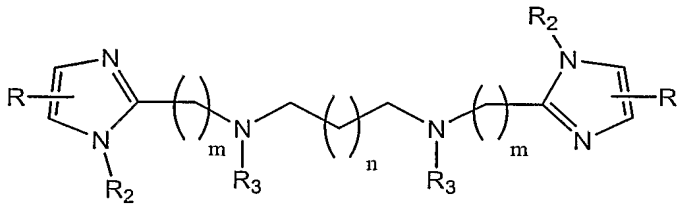
m is an integer in the range 0 to 6 inclusive; and

n is an integer in the range 0 to 6 inclusive.

75. The compound of claim 74, wherein the compound is complexed with a radionuclide.

76. The compound of claim 74, wherein the compound is complexed with a radionuclide, wherein the radionuclide is technetium or rhenium.

77. A compound of formula **I**:



I

wherein, independently for each occurrence,

R is absent or present 1 or 2 times;

R is halogen, alkyl, alkenyl, alkynyl, hydroxyl, alkoxyl, acyl, acyloxy, acylamino, silyloxy, amino, nitro, sulfhydryl, alkylthio, imino, amido, phosphoryl, phosphonate, phosphine, carbonyl, carboxyl, carboxamide, anhydride, silyl, thioalkyl, alkylsulfonyl, arylsulfonyl, selenoalkyl, ketone, aldehyde, ester, heteroalkyl, cyano, guanidine, amidine, acetal, ketal, amine oxide, aryl, heteroaryl, aralkyl, heteroaralkyl, azido, aziridine, carbamoyl, epoxide, hydroxamic acid, imide, oxime, sulfonamide, thioamide, thiocarbamate, urea, thiourea, or $-(CH_2)_d-R_{80}$;

R_{80} is carboxaldehyde, carboxylate, carboxamido, alkoxycarbonyl, aryloxycarbonyl, ammonium, aryl, heteroaryl, cycloalkyl, cycloalkenyl, heterocyclyl, polycyclyl, amino acid, peptide, saccharide, ribonucleic acid, (deoxy)ribonucleic acid, or ligand for a G-protein-coupled receptor;

R_2 is H or a lipophilic group;

R_3 is a moiety comprising a neutral or anionic Lewis base, H, alkyl, hydroxyalkyl, alkoxyalkyl, aminoalkyl, thioalkyl, alkenyl, alkynyl, aryl, heteroaryl, aralkyl, heteroaralkyl, acyl, aminoacyl, hydroxyacyl, thioacyl, (amino)alkoxycarbonyl, (hydroxy)alkoxycarbonyl, (amino)alkylaminocarbonyl, (hydroxy)alkylaminocarbonyl, $-CO_2H$, $-(CH_2)_d-R_{80}$, or an amino acid radical;

d is an integer in the range 0 to 12 inclusive;

m is an integer in the range 0 to 6 inclusive; and

n is an integer in the range 0 to 6 inclusive.

78. The compound of claim 77, wherein the compound is complexed with a radionuclide.

79. The compound of claim 77, wherein the compound is complexed with a radionuclide, wherein the radionuclide is technetium or rhenium.

80. The compound of claim 77, wherein m is 1.

81. The compound of claim 77, wherein n is 1.

82. The compound of claim 77, wherein m is 1; and n is 1.

83. The compound of claim 77, wherein R is absent.

84. The compound of claim 77, wherein R_2 is a lipophilic group.

85. The compound of claim 77, wherein R_2 is an ether, aralkyl, or alkylaryl.

86. The compound of claim 77, wherein R_3 is a moiety comprising an anionic Lewis base.

87. The compound of claim 77, wherein R_3 is a carboxylate, thiolate, or phenolate.

88. The compound of claim 77, wherein R is absent; and R_2 is an ether, aralkyl, or alkylaryl.

89. The compound of claim 77, wherein R is absent; R_2 is an ether, aralkyl, or alkylaryl; and R_3 is a carboxylate, thiolate, or phenolate.

90. The compound of claim 77, wherein m is 1; n is 1; R is absent; and R_2 is an ether, aralkyl, or alkylaryl.

91. The compound of claim 77, wherein m is 1; n is 1; R is absent; R_2 is an ether, aralkyl, or alkylaryl; and R_3 is a carboxylate, thiolate, or phenolate.

92. The compound of claim 77, wherein m is 1; n is 1; R is absent; and R_2 is an ether, aralkyl, or alkylaryl; wherein said compound is complexed with a radionuclide.

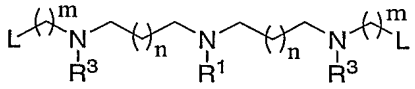
93. The compound of claim 77, wherein m is 1; n is 1; R is absent; R_2 is an ether,

aralkyl, or alkylaryl; and R_3 is a carboxylate, thiolate, or phenolate; wherein the compound is complexed with a radionuclide.

94. The compound of claim 77, wherein m is 1; n is 1; R is absent; and R_2 is an ether, aralkyl, or alkylaryl; wherein the compound is complexed with a radionuclide, wherein the radionuclide is technetium or rhenium.

95. The compound of claim 77, wherein m is 1; n is 1; R is absent; R_2 is an ether, aralkyl, or alkylaryl; and R_3 is a carboxylate, thiolate, or phenolate; wherein the compound is complexed with a radionuclide, wherein the radionuclide is technetium or rhenium.

96. A compound of formula **J**:

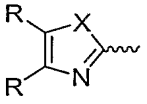
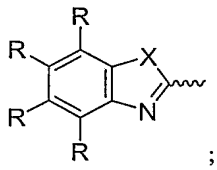


J

wherein, independently for each occurrence,

n is an integer in the range 0 to 6 inclusive;

m is an integer in the range 0 to 6 inclusive;

L is  or  ;

X is $-N(R^2)-$, -O-, or -S-;

R_1 is H, alkyl, hydroxyalkyl, alkoxyalkyl, aminoalkyl, thioalkyl, alkenyl, alkynyl, aryl, heteroaryl, aralkyl, heteroaralkyl, acyl, aminoacyl, hydroxyacyl, thioacyl, (amino)alkoxycarbonyl, (hydroxy)alkoxycarbonyl, (amino)alkylaminocarbonyl, (hydroxy)alkylaminocarbonyl, $-CO_2H$, $-(CH_2)_d-R_{80}$, or an amino acid radical;

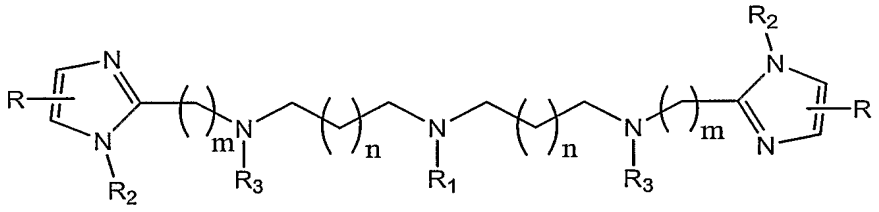
R_3 is a moiety comprising a neutral or anionic Lewis base, H, alkyl, hydroxyalkyl, alkoxyalkyl, aminoalkyl, thioalkyl, alkenyl, alkynyl, aryl, heteroaryl, aralkyl, heteroaralkyl, acyl, aminoacyl, hydroxyacyl, thioacyl, (amino)alkoxycarbonyl, (hydroxy)alkoxycarbonyl, (amino)alkylaminocarbonyl, (hydroxy)alkylaminocarbonyl, $-CO_2H$, $-(CH_2)_d-R_{80}$, or an amino acid radical; and

R_{80} represents independently for each occurrence carboxaldehyde, carboxylate, carboxamido, alkoxycarbonyl, aryloxycarbonyl, ammonium, aryl, heteroaryl, cycloalkyl, cycloalkenyl, heterocyclyl, polycyclyl, amino acid, peptide, saccharide, ribonucleic acid, (deoxy)ribonucleic acid, or ligand for a G-protein-coupled receptor.

97. A compound of formula 96, wherein the compound is complexed with a radionuclide.

98. The compound of claim 96, wherein the compound is complexed with a radionuclide, wherein the radionuclide is technetium or rhenium.

99. A compound of formula **K**:



K

wherein, independently for each occurrence,

R is absent or present 1 or 2 times;

R is halogen, alkyl, alkenyl, alkynyl, hydroxyl, alkoxyl, acyl, acyloxy, acylamino, silyloxy, amino, nitro, sulfhydryl, alkylthio, imino, amido, phosphoryl, phosphonate, phosphine, carbonyl, carboxyl, carboxamide, anhydride, silyl, thioalkyl, alkylsulfonyl, arylsulfonyl, selenoalkyl, ketone, aldehyde, ester, heteroalkyl, cyano, guanidine, amidine, acetal, ketal, amine oxide, aryl, heteroaryl, aralkyl, heteroaralkyl, azido, aziridine, carbamoyl, epoxide, hydroxamic acid, imide, oxime, sulfonamide, thioamide, thiocarbamate, urea, thiourea, or $-(CH_2)_d-R_{80}$;

R_{80} is carboxaldehyde, carboxylate, carboxamido, alkoxycarbonyl, aryloxycarbonyl, ammonium, aryl, heteroaryl, cycloalkyl, cycloalkenyl, heterocyclyl, polycyclyl, amino acid, peptide, saccharide, ribonucleic acid, (deoxy)ribonucleic acid, or ligand for a G-protein-coupled receptor;

R_1 is H, alkyl, hydroxyalkyl, alkoxyalkyl, aminoalkyl, thioalkyl, alkenyl, alkynyl,

aryl, heteroaryl, aralkyl, heteroaralkyl, acyl, aminoacyl, hydroxyacyl, thioacyl, (amino)alkoxycarbonyl, (hydroxy)alkoxycarbonyl, (amino)alkylaminocarbonyl, (hydroxy)alkylaminocarbonyl, $-CO_2H$, $-(CH_2)_d-R_{80}$, or an amino acid radical;

R_2 is H or a lipophilic group;

R_3 is a moiety comprising a neutral or anionic Lewis base, H, alkyl, hydroxyalkyl, alkoxyalkyl, aminoalkyl, thioalkyl, alkenyl, alkynyl, aryl, heteroaryl, aralkyl, heteroaralkyl, acyl, aminoacyl, hydroxyacyl, thioacyl, (amino)alkoxycarbonyl, (hydroxy)alkoxycarbonyl, (amino)alkylaminocarbonyl, (hydroxy)alkylaminocarbonyl, $-CO_2H$, $-(CH_2)_d-R_{80}$, or an amino acid radical;

d is an integer in the range 0 to 12 inclusive;

m is an integer in the range 0 to 6 inclusive; and

n is an integer in the range 0 to 6 inclusive.

100. A compound of formula 99, wherein the compound is complexed with a radionuclide.

101. The compound of claim 99, wherein the compound is complexed with a radionuclide, wherein the radionuclide is technetium or rhenium.

102. The compound of claim 99, wherein m is 1.

103. The compound of claim 99, wherein n is 1.

104. The compound of claim 99, wherein m is 1; and n is 1.

105. The compound of claim 99, wherein R is absent.

106. The compound of claim 99, wherein R_2 is a lipophilic group.

107. The compound of claim 99, wherein R_2 is an ether, aralkyl, or alkylaryl.

108. The compound of claim 99, wherein R_3 is a moiety comprising an anionic Lewis base.

109. The compound of claim 99, wherein R_3 is a carboxylate, thiolate, or phenolate.

110. The compound of claim 99, wherein R is absent; and R_2 is an ether, aralkyl, or alkylaryl.

111. The compound of claim 99, wherein R is absent; R_2 is an ether, aralkyl, or alkylaryl;

and R_3 is a carboxylate, thiolate, or phenolate.

112. The compound of claim 99, wherein m is 1; n is 1; R is absent; and R_2 is an ether, aralkyl, or alkylaryl.

113. The compound of claim 99, wherein m is 1; n is 1; R is absent; R_2 is an ether, aralkyl, or alkylaryl; and R_3 is a carboxylate, thiolate, or phenolate.

114. The compound of claim 99, wherein R_1 is $-(CH_2)_d-R_{80}$.

115. The compound of claim 99, wherein m is 1; n is 1; R is absent; R_2 is an ether, aralkyl, or alkylaryl; and R_1 is $-(CH_2)_d-R_{80}$.

116. The compound of claim 99, wherein m is 1; n is 1; R is absent; R_2 is an ether, aralkyl, or alkylaryl; R_3 is a carboxylate, thiolate, or phenolate; and R_1 is $-(CH_2)_d-R_{80}$.

117. The compound of claim 99, wherein m is 1; n is 1; R is absent; R_2 is an ether, aralkyl, or alkylaryl; and R_1 is $-(CH_2)_d-R_{80}$; wherein the compound is complexed with a radionuclide.

118. The compound of claim 99, wherein m is 1; n is 1; R is absent; R_2 is an ether, aralkyl, or alkylaryl; R_3 is a carboxylate, thiolate, or phenolate; and R_1 is $-(CH_2)_d-R_{80}$; wherein the compound is complexed with a radionuclide.

119. The compound of claim 99, wherein m is 1; n is 1; R is absent; R_2 is an ether, aralkyl, or alkylaryl; and R_1 is $-(CH_2)_d-R_{80}$; wherein the compound is complexed with a radionuclide, wherein the radionuclide is technetium or rhenium.

120. The compound of claim 99, wherein m is 1; n is 1; R is absent; R_2 is an ether, aralkyl, or alkylaryl; R_3 is a carboxylate, thiolate, or phenolate; and R_1 is $-(CH_2)_d-R_{80}$; wherein the compound is complexed with a radionuclide, wherein the radionuclide is technetium or rhenium.

121. The compound of claim 99, wherein R_1 is an amino acid radical.

122. The compound of claim 99, wherein R_1 is an amino acid radical; m is 1; and n is 1.

123. The compound of claim 99, wherein R_1 is an amino acid radical; m is 1; n is 1; R is absent; and R_2 is an ether, aralkyl, or alkylaryl.

124. The compound of claim 99, wherein R_1 is an amino acid radical; m is 1; n is 1; R is

absent; R_2 is an ether, aralkyl, or alkylaryl; and R_3 is a carboxylate, thiolate, or phenolate.

125. The compound of claim 99, wherein R_1 is an amino acid radical; m is 1; n is 1; R is absent; and R_2 is an ether, aralkyl, or alkylaryl; wherein the compound is complexed with a radionuclide.

126. The compound of claim 99, wherein R_1 is an amino acid radical; m is 1; n is 1; R is absent; R_2 is an ether, aralkyl, or alkylaryl; and R_3 is a carboxylate, thiolate, or phenolate; wherein the compound is complexed with a radionuclide.

127. The compound of claim 99, wherein R_1 is an amino acid radical; m is 1; n is 1; R is absent; and R_2 is an ether, aralkyl, or alkylaryl; wherein the compound is complexed with a radionuclide, wherein the radionuclide is technetium or rhenium.

128. The compound of claim 99, wherein R_1 is an amino acid radical; m is 1; n is 1; R is absent; R_2 is an ether, aralkyl, or alkylaryl; and R_3 is a carboxylate, thiolate, or phenolate; wherein the compound is complexed with a radionuclide, wherein the radionuclide is technetium or rhenium.

129. The compound of claim 99, wherein the amino acid radical is $-CH_2CH_2CH_2CH_2CH(NH_2)CO_2H$.

130. The compound of claim 99, wherein the amino acid radical is $-CH(CO_2H)CH_2CH_2CH_2CH_2NH_2$.

131. The compound of claim 99, wherein the amino acid radical is $-CH_2CH_2CO_2H$.

132. The compound of claim 99, wherein the amino acid radical is $-CH(CO_2H)(CH_2)_xCH(NH_2)CO_2H$, wherein x is an integer from 3 to 9 inclusively.

133. A formulation, comprising a compound according to any of claims 1-132; and a pharmaceutically acceptable excipient.

134. A method of imaging a region in a patient, comprising the steps of: administering to a patient a diagnostically effective amount of a compound of claim 2, 3, 5, 6, 17, 18, 22, 23, 29, 30, 32, 33, 43, 44, 48, 49, 55, 56, 59, 60, 62, 63, 72, 73, 75, 76, 78, 79, 92-95, 97, 98, 100, 101, 117-120, or 125-128; and obtaining an image of said region of said patient.

135. The method of claim 134, wherein said region of said patient is the head or thorax.

136. A method of preparing a peptide conjugate incorporating a compound of claim 19-27, 45-53 or 121-132, wherein the peptide conjugate is prepared using solid phase synthetic techniques.